

Managing the difficult airway in Multi-Systems Trauma

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Polytrauma

- More than 1 organ system involved
- Pulmonary
- Circulatory
- Neurological
- Integumentary
- Musculo-skeletal
- Genito-urinary
- Endocrine

Same stuff-different day!

- Different point of view
- Results are the same
- 20+ years as EMS provider & educator



EMS History

- 1966 The “White Paper”
- National Academy of Sciences
- Accidental Death and Disability-The Neglected Disease of Modern Society
- Resulted (eventually) in development of EMS systems

MOVING FORWARD

- For relevance to field of Respiratory Care
- Moving the scene to the Emergency Department
- 7 points or objectives of relevance in this presentation:

Objectives

1. Identify pt’s “at risk” for airway/ventilatory compromise.
2. Recognize signs and symptoms of “impending” or actual airway emergencies
3. Identify current standards of practice for rapid trauma assessment.

Objectives

- 4. Identify airway/ventilatory management priorities in the polytrauma patient.
- 5. Identify standard adjunctive airway devices
- 6. Identify “new” devices available for management of the difficult airway

Objectives

- 7. Identify modes of ventilation in current practice for the polytrauma patient.

Polytrauma impact

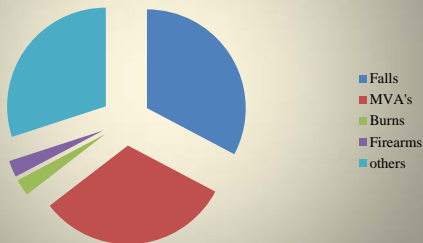
- Disproportionate impact on young citizens
- Commonly patients are in good health
- Road to recovery difficult and often complicated.

Who are the players?

- Multi-disciplinary team
- Roles and Responsibilities
- Depends largely on size of facility
- Available staffing

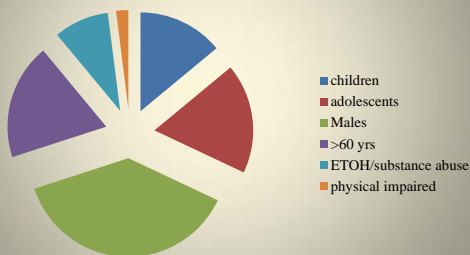
Patients at risk

Deaths from Trauma



High Risk patient types

Description



Injury risk Factors
(predictor of injury severity)

- Systolic BP <90
- RR <10 or >29
- GCS scale <13
- Prolonged pre hosp. time >30 min
- Pedestrians struck >20mph
- Comorbidity-diabetes, CV disease, obesity, pulmonary disease
- Infants & sm. Children
- Penetrating chest trauma

Signs of Impending airway emergencies

- AARC clinical practice guideline-mgmt of airway emergencies:
- Identify, assess & treat those in danger of losing airway
- Identify the cause
- Oxygenation/ventilation prior to ET intubation
- Adjunctive airway equipment to establish and maintain effective ventilation.

Examples of Difficult Airways

- Maxillo-facial trauma from multiple causes
- Gunshot wounds
- Assaults
- Deceleration from MVA's
- Animal bites-particularly to children
- Neck trauma
- Thermal injuries

Rapid Trauma Assessment reference-ATLS

- Goal-locate and treat immediate life threats!
- Time limit-1-2 minutes unless threats are discovered & require treatment
- ABCDE
- Airway control-oxygenation & c-spine;talk to pt.- clear phonation establishes airway patency
- Assess adequacy of gas exchange-
- Look-mechanism of injury;Maxillo-facial, burns, chest trauma (flail, sucking wounds, etc) cyanosis.

Rapid Assessment, cont.

- Tachypnea, accessory muscles, tracheal shift
- Listen-stridor, hyperresonance, dullness
- Feel-evidence of deformity that compromises airway.
- Pulse oximetry, capnography, ABG's
- Intubate-decision making. Apneic, aspiration potential, hypoventilation-hypercapnea, facial burns, etc.

Intubation Decisions

- Oral vs. Nasal
- Blind nasal-spontaneously breathing, unconscious or cooperative
- Nasal-failure rate >35%; 3.7 attempts vs. 1.3 attempts (oral)
- Experience with nasal intubations?
- Nasal contraindicated in basilar skull fx

What if?

- Alternatives to ET intubation? Contingencies in case intubation unsuccessful
- Glidescope or others
- Sellick maneuver
- Institute mechanical ventilation-depending on physical findings as to timeliness

Circulation

- Looking for hypoxemic causes
- Blood loss may be obvious or subtle
- Obvious blood loss relative to patient size
- Pediatric trauma overlooked

Disability and Exposure

- Final parts of primary trauma assessment
- Disability primarily looks at neurological impairment-potential signs of increased ICP
- Exposure-trauma patients must be exposed; protect from spectators and preserve body temperature.

Trauma assessment/scoring

- Variety of scoring methods available-many are not practical for clinical practice
- 2 easiest to use are AVPU and GCS

Pulmonary System Management Priorities

- Depends on findings in the primary survey
- GSC <8-artificial airway essential
- Protect the airway AND protect the ET tube
- Accidental extubation common if not observant
- Primary assessment/management does not prohibit a rapid deterioration...Reassess, Reassess, Reassess.

Pulmonary Mgmt, cont.

- Mechanical ventilation-hemodynamic compromise
- Avoid use of vasopressors until hemodynamic issues corrected.
- Comorbid processes-
- Always protect the Lungs!
- ARDS/ALI not uncommon

**Airway Adjuncts-
new and not so new**

- Return to basics-OP/NP airways
- BVM's
- ET intubation
- LMA's
- Combitubes
- Glidescopes/Pentax AWS (& others)
- Learn what EMS providers are using

Skill management

- Plan for skill deterioration and address issues
- AHA adjuncts for airway control quote:
- “The endotracheal tube was once considered the optimal method of managing the airway during cardiac arrest. It is now clear, however, that the incidence of complications is unacceptably high when intubation performed by inexperienced providers or monitoring of tube placement is inadequate”.

Modes of Ventilation

- Several options-depends largely on facility
- Commercial names for modes using adaptive control:
- Drager-autoflow
- Hamilton-Adaptive Pressure Ventilation and Adaptive Support Ventilation
- Marquette-Pressure Regulated Volume Control
- PB 840-Volume control+

Modes, cont.

- Viasys/Pulmonetics-Pressure Regulated Volume Control
- Viasys/Avea-PRVC
- Theoretically-closed loop that adjusts pressure based on changing mechanics.
- Claims are broad-virtually automated

ARDS

- Example protocol-
- Mode-volume A/C
- Initial volume at 8ml/kg titrate to 6ml/kg within 4 hrs
- Goal to maintain plateau pressure <30
- Arterial oxygenation-PaO2 55-80 or SpO2 88-95
- I/E goal-1:1.0-1:3.0

Questions?

- That I can answer!

